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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/044,785 | 01/11/2002 | Peter D. Geiger | 5143-03100 | 9398 |

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Jeffrey C. Hood
Conley, Rose & Tayon, P.C.
P.O. Box 398
Austin, TX 78767

EXAMINER

WILLIAMS, HOWARD L

ART UNIT PAPER NUMBER

2819

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|--------------------|--------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/044,785 | Dye |
| | Examiner | Art Unit |
| | Howard L. Williams | 2819 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 31 March 2003.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-72 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-6, 8-10, 12-21, 23-25, 27-33, 35-49, 51-68 and 70-72 is/are rejected.

7) Claim(s) 7, 11, 22, 26, 34, 50, 69 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 11 January 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. | 6) <input type="checkbox"/> Other: _____. |

Period for Response

A shortened statutory period for response to this action is set to expire three months from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 USC § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

The number of claims submitted is considered truly excessive.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 8-10, 12, 14-16, 19, 20, 23, 24, 27, 29-32, 35-40, 45-48, 51-53, 55-61, 65-68 and 70-72 are rejected under 35 U.S.C. 103(a) as unpatentable over Seroussi et al. (US 5,389,922) in view of Masenas (US 5,771,011). Seroussi discloses a compression and decompression system which places a plurality of different compression algorithms in "competition" with each other with the winner being determined by which compressor produces the best match. See fig. 20. Masenas discloses a content addressable memory based implementation of the compression engine and dictionary for Lempel-Ziv type string compression which searches on plural byte strings. It would have been obvious from the teachings of Masenas to employ a CAM based architecture for the string matching dictionary or buffer because the parallel comparison of the CAM based architecture would speed the search process by comparing the input string against all dictionary entries at once.

Claims 39 and 57 are rejected under 35 U.S.C. 103(a) as unpatentable over Seroussi et al. (US 5,389,922) in view of Masenas (US 5,771,011). Seroussi discloses compression with selection between different algorithms. It is self-evident to one of skill in the art that the compression method used upon compressing the data must be communicated to the decompressor for recovery of the data. Masenas discloses a content addressable memory based implementation of the compression engine and dictionary for Lempel-Ziv type string compression which searches on plural byte strings. It would have been obvious from the teachings of Masenas to employ a CAM based architecture for the string matching dictionary or buffer because the parallel comparison of the CAM based architecture would speed the search process by comparing the input string against all dictionary entries at once.

Claims 39 and 57 are rejected under 35 U.S.C. 103(a) as unpatentable over Seroussi et al. (US 5,389,922) and Welch (US 4,558,302) in view of Masenas (US 5,771,011). Welch discloses (col. 51 line 45+) speed and compression ratio control variations to maintain the data throughput and provide a measure of control to ratio. It would have been obvious to one of skill in the art to include these controls for purposes such as matching data rates between synchronous devices to reduce buffering requirements. Welch discloses CAM based implementations of the compressor. Masenas discloses a content addressable memory based implementation of the compression engine and dictionary for Lempel-Ziv type string compression which searches on plural byte strings. It would have been obvious from the teachings of Masenas to employ a CAM based architecture for the string matching dictionary or buffer because the parallel comparison of the CAM based architecture would speed the search process by comparing the input string against all dictionary entries at once.

Claims 6, 17, 18, 21, 25, 33, 49 and 62-64 are rejected under 35 U.S.C. 103(a) as unpatentable over Seroussi et al. (US 5,389,922) and Chu (US 5,150,430) in view of Masenas (US 5,771,011). Seroussi does not disclose concurrent comparison of each of a plurality of received symbols with each of a plurality of entries in a history table. Chu provides three embodiments basically depicted in figures 3, 5 and 11. The last embodiment combines multiple symbol concurrent searching across a portion of the input stream with selection of the best codeword determined by longest match, i.e. the most compression, and using multiple compressors to achieve the aforementioned method across different portions (col. 15 line 35 through col. 16, line 60). It would have been obvious to combine the teachings of Chu and Seroussi to improve the compression speed and ratio while maintaining a rate suitable to keep up with fast storage system (Chu col. 10, lines 48-49). Masenas discloses a content addressable memory based implementation of the compression engine and dictionary for Lempel-Ziv type string compression which searches on plural byte strings. It would have been obvious from the teachings of Masenas to employ a CAM based architecture for the string matching dictionary or buffer because the parallel comparison of the CAM based architecture would speed the search process by comparing the input string against all dictionary entries at once.

Claims 41-44 are rejected under 35 U.S.C. 103(a) as unpatentable over Seroussi et al. (US 5,389,922) and Cheng et al. (US 5,608,396) in view of Masenas (US 5,771,011). Cheng et al. teaches the compressor/decompressor device as separate systems placed immediately prior to memory or network channels to other computers (fig. 12). It would have been obvious to provide compressor/decompressor as separate units as taught by Cheng et al. at placements where useful (reduced transmission time, better storage efficiency) thereby freeing the main processor from extra tasks. Masenas discloses a content addressable memory based implementation of the compression engine and dictionary for

Lempel-Ziv type string compression which searches on plural byte strings. It would have been obvious from the teachings of Masenas to employ a CAM based architecture for the string matching dictionary or buffer because the parallel comparison of the CAM based architecture would speed the search process by comparing the input string against all dictionary entries at once.

Applicant's arguments filed March 31, 2003 have been fully considered but they are not persuasive. The response raises two principle lines for argument of the rejections lack of the self-styled "parallel compression" and no raw data output. The issue of parallel compression method was the idea behind the parent application (note that the instant description refers the reader there for a full description) and was thought to have been settled previously. However, since the response seems to desire to rehash select items the rejections previously applied and effectively conceded to will be re-applied. As for the no raw data argument this is refuted by the applicants own disclosure on page 18 where the method to differentiate between compressed and raw data streams is discussed.

Any inquiry concerning this communication should be directed to Howard L. Williams at telephone number 703-308-1679.

9 July 2003


Howard L. Williams
Primary Examiner
Art Unit 2819